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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/551,245

09/28/2005

Claus Breuer

71027-022

1883

7590

04/17/2007

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EXAMINER

LEE, GILBERT Y

ART UNIT

PAPER NUMBER

3673

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/551,245

Applicant(s)

BREUER ET AL.

Examiner

Gilbert Y. Lee

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 8-13 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-13 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Information Disclosure Statement***

1. The prior art filed 9/28/05 was not disclosed in a proper information disclosure statement. The prior art has not been considered unless cited by the examiner on form PTO-892.

The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

### ***Drawings***

2. The drawings are objected to because Figs. 5 and 6 have labels that are not in English. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

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changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. Claim 8 is objected to because of the following informalities: in line 7, "and he cross-section" should be changed to --and the cross-section--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 8-13 rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. What the "constant twist angle" is being referenced to in claims 8 and 9, critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). Claims 8 and 9 definitely claim a "constant twist angle".

However, the specification, drawings and claims do not disclose what the twist angle is in relation to or how it is achieved.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 8-11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsley et al. (US Patent No. 1,645,146) in view of SU Patent No 504906 (herein '906).

Regarding claim 8, the Kinsley reference discloses, as best understood, a piston ring (1) having a gap (3), a friction surface (e.g. right surface of element 2 in Fig. 4), an inner surface (e.g. left surface of element 1 in Fig. 4) and upper (e.g. top flank of element 1 in Fig. 4) and lower (e.g. bottom flank of element 1) flanks;

said piston ring having a radial wall thickness that varies (Fig. 1), where in the area of the gap the wall thickness is smaller than the area diametrically opposite from the gap.

However, the Kinsley reference, fails to explicitly disclose a non-constant cross-section cut being wider in the area of the gap as compared to an area diametrically opposed from the gap and wherein the relationship between the wall thickness and the

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cross-section cut is continually so formed that the piston ring, viewed in the circumferential direction presents a constant twist angle.

The '906 reference, a seal ring, discloses a non-constant cross-section cut being wider in the area of the gap as compared to an area diametrically opposed from the gap (Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a non-constant cross-section cut being wider in the area of the gap as compared to an area diametrically opposed from the gap to the Kinsley et al. reference in view of the '906 reference in order to control the elastic deformation of the seal ring. Note that because the modified Kinsley reference discloses the structure of the claimed invention, the modified Kinsley reference will present a constant twist angle.

Regarding claim 9, the Kinsley reference, as modified in claim 8 and as best understood, discloses the piston ring. Note that because the modified Kinsley reference discloses the structure of the claimed invention, the modified Kinsley reference will have all of the variables listed in the equation of claim 9.

Regarding claim 10, the Kinsley reference, as modified in claim 8, discloses the cross-section cut being formed by a bevel ('906, Fig. 1).

Regarding claim 11, the Kinsley reference, as modified in claim 10, discloses the bevel having an angle that varies in the circumferential direction ('906, Fig. 1).

Regarding claim 13, the Kinsley reference, as modified in claim 10, discloses the cut being formed by means of an angular exclusion (Kinsley, Fig. 1).

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6. Claims 8-10, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinsley et al. (US Patent No. 1,645,146) in view of Colvin (US Patent No. 2,591,920).

Regarding claim 8, the Kinsley reference discloses, as best understood, a piston ring (1) having a gap (3), a friction surface (e.g. right surface of element 2 in Fig. 4), an inner surface (e.g. left surface of element 1 in Fig. 4) and upper (e.g. top flank of element 1 in Fig. 4) and lower (e.g. bottom flank of element 1) flanks;

said piston ring having a radial wall thickness that varies (Fig. 1), where in the area of the gap the wall thickness is smaller than the area diametrically opposite from the gap.

However, the Kinsley reference, fails to explicitly disclose a non-constant cross-section cut being wider in the area of the gap as compared to an area diametrically opposed from the gap and wherein the relationship between the wall thickness and the cross-section cut is continually so formed that the piston ring, viewed in the circumferential direction presents a constant twist angle.

The Colvin reference, a piston ring, discloses a non-constant cross-section cut (21) being wider in the area of the gap as compared to an area diametrically opposed from the gap (Fig. 2).

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a non-constant cross-section cut being wider in the area of the gap as compared to an area diametrically opposed from the gap to the Kinsley et al. reference in view of the Colvin reference in order to control the elastic deformation of

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the seal ring (Colvin, Col. 3, Line 25-51). Note that because the modified Kinsley reference discloses the structure of the claimed invention, the modified Kinsley reference will present a constant twist angle.

Regarding claim 9, the Kinsley reference, as modified in claim 8 and as best understood, discloses the piston ring. Note that because the modified Kinsley reference discloses the structure of the claimed invention, the modified Kinsley reference will have all of the variables listed in the equation of claim 9.

Regarding claim 10, the Kinsley reference, as modified in claim 8, discloses the cross-section cut being formed by a bevel (Colvin, Fig. 3).

Regarding claim 12, the Kinsley reference, as modified in claim 10, discloses the bevel having an angle that is constant in the circumferential direction (Colvin, Figs. 1 and 3).

Regarding claim 13, the Kinsley reference, as modified in claim 10, discloses the cut being formed by means of an angular exclusion (Kinsley, Fig. 1).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gilbert Y. Lee whose telephone number is 571-272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

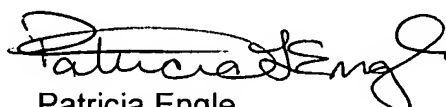
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle can be reached on (571)272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GL  
April 13, 2007

A handwritten signature in black ink, appearing to read "Patricia Engle", with a stylized flourish at the end.

Patricia Engle  
Supervisory Examiner  
Tech. Center 3600